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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,215	03/29/2004	Veera Palanivelu Rajendran	136440-1/YOD GERD:0091	3028
7590 09/20/2005			EXAMINER	
Patrick S. Yoder FLETCHER YODER P.O. Box 692289 Houston, TX 77269-2289			SONG, SARAH U	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/812,215

Applicant(s)

RAJENDRAN ET AL.

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 11 and 13-21 is/are rejected.
- 7) ☒ Claim(s) 8, 9 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0304.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Information Disclosure Statement***

1. The prior art documents submitted by the applicant in the Information Disclosure Statement filed on March 29, 2004 have all been considered and made of record (note the attached copy of form PTO-1449).

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-7, 10, 11 and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helmig et al. (U.S. Patent Application Publication 2001/0022804) in view of Lenhardt et al. (U.S. Patent 5,079,716).**

4. Regarding claims 1-4, 15, 16 and 21, Helmig et al. discloses a temperature monitoring system comprising at least one temperature sensor 70 configured for measuring the temperature of at least one portion of a device and generating a measured temperature signal representative thereof; an optical cable 77 coupled to the sensor and configured for transmitting the measured temperature signal; and temperature monitoring circuitry coupled to the cable and configured for monitoring the measured temperature signal from the at least one portion of the device. See ¶0035.

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5. Helmig et al. discloses the temperature monitoring system for energy-producing or energy-consuming devices (§0001), but does not expressly disclose the system for a battery assembly. Helmig et al. also does not expressly disclose a battery temperature control circuitry coupled to a charging device for charging the battery assembly based on a control signal.

6. Lenhardt et al. discloses a temperature monitoring system for a battery assembly in order to control the battery charging operation. Lenhardt et al. also discloses a battery temperature control circuitry coupled to a charging device for charging the battery assembly based on a control signal. See Abstract.

7. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the temperature monitoring system of Helmig et al. for a battery assembly. It further would have been obvious to provide control circuitry and a charging device.

8. One of ordinary skill in the art would have been motivated to provide optical temperature sensor for a battery assembly, along with the control circuitry and charging device, for the purpose of providing a more accurate temperature monitoring to optimize battery charging operations.

9. Helmig et al. does not expressly disclose a plurality of battery modules, each comprising a plurality of batteries, the temperature monitoring circuitry configured to monitor temperature of at least two battery modules or batteries. Battery assemblies comprising a plurality of battery modules and batteries are well known. Fiber optic sensors are well known in the art for providing multiple sensor locations within a circuit. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuitry of

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Helmig et al. to monitor temperature of at least two battery modules or batteries for the purpose of providing a complete temperature profile for optimized charging operation of the entire battery assembly. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide plural battery modules and batteries and correspondingly configured circuitry since it has been held that mere duplication of essential working parts requires routine skill in the art.

10. Regarding claims 5 and 17, the sensor comprises a Bragg grating structure 62 etched onto an optical fiber.

11. Regarding claims 6, 7, 18 and 19, Helmig et al. and Lenhardt et al. do not expressly disclose the temperature sensor disposed outside or inside the battery assembly. However, it is well known in the art to monitor the internal and external temperature of a battery assembly. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the temperature sensor of Helmig et al. on the outside of the battery assembly to ease manufacture and to reduce costs. It also would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the temperature sensor of Helmig et al. on the inside of the battery assembly for the purpose of providing more accurate temperature readings.

12. Regarding claims 10, 11, 13, 14 and 20, the method claims would also have been obvious for the reasons above as setting forth requisite steps.

***Allowable Subject Matter***

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13. Claims 8, 9 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to disclose and reasonably suggest the temperature monitoring circuitry specifically comprising a laser modulation device for generating a laser trigger signal, reference circuitry for generating a reference signal, measurement circuitry for providing at least one measurement signal of the battery assembly, and a plurality of fiber optic couplers for splitting the laser trigger signal, the fiber optic couplers coupling the laser modulation device to the reference circuitry and the measurement circuitry as recited in claim 8; the prior art fails to disclose or reasonably suggest the method further comprising generating a laser trigger signal and reference signal, generating a plurality of measurement signals, generating a control signal based on the reference signal and the measurement signal as recited in claim 12. Claim 9 would be allowable by nature of its dependency.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Sarah Song  
Patent Examiner  
Group Art Unit 2874